

Total Pages—4 PG/IVS/MTM-408/14(OM)(Pr.)

M.Sc. 4th Semester Examination, 2014

**APPLIED MATHEMATICS WITH OCEANOLOGY
AND COMPUTER PROGRAMMING**

(Lab on Special Paper (OM))

(Practical)

PAPER—MTM-408 (OM)

Full Marks : 25

Time : 2 hours

Answer any one question from each Group

The figures in the right-hand margin indicate marks

GROUP – A

1. Find the mixing ratio of the air near the science building measuring of wet and dry bulb temperatures taking a set of 5 data. 7

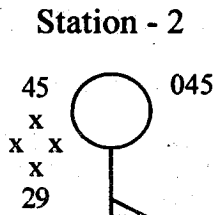
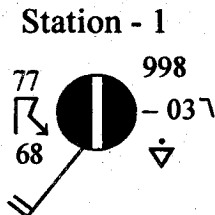
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(2)

2. Calculate the wind speed and wind direction near the science building taking a set of 5 data. 7
3. Find the dew point temperature by measuring dry bulb and wet bulb temperature near the science building taking a set of 5 data. 7
4. Calculate the saturation vapour pressure near the science building taking a set of 5 data. 7
5. Find the relative humidity near the science building taking a set of 5 data. 7
6. Calculate the vapor pressure near the science building taking a set of 5 data. 7

GROUP – B

7. Using the station model below, decode the weather conditions and record the information : 4



8. In the chart below you find meteorological data that was taken at several different cities in India. Use this data to create the station models for each city listed in the table. 4

City	Temp (°F)	Dew point	Wind		Air Pressure	Sky	Present Weather
			Direction	Speed			
Calcutta	69	58	SW	16	1016.9	50%	none
Kashmir	32	32	S	10	1030.1	overcast	snow
Bombay	70	69	SW	20	998.2	25%	drizzle
Chennai	72	72	W	30	986.4	100%	thunderstorm

GROUP – C

9. Air initially at 100 kPa has temperature 40 °C and dew point temperature of 20 °C. It rises to a height where the pressure is 50 kPa. Precipitation reduces the total water by 5 g/kg and the parcel radiatively cools by 11 °C while at cloud top. Finally the parcel descends back to 100 kPa. What is the final relative humidity? (Use Temphigram) 4

10. For the air parcel whose pressure is 70 kPa, temperature being 20 °C and mixing ratio being 4 g/kg, find its lifting condensation level, state of the air parcel when it reaches a pressure height of 40 kPa and how much liquid water has been condensed out at that height ? (Use Tephigram). 4

Field Work 5

Note Book + Viva 5